

REMARKS

Claims 1-30 are pending in the present application, with Claims 1, 8, 9, and 24 being independent.

Claims 1-30 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse this rejection for the reasons discussed below.

Initially, Applicants submit that, based on the rationale provided in the Office Action, this appears to be a rejection based on alleged lack of enablement rather than lack of written description. The Office Action asserts that it is unclear from the specification how the conversion from gray-scale image data into color image data is done and whether the image has all of the RGB components once converted. Thus, it appears the Examiner is asserting that the specification does not enable one skilled in the art to make and use this feature.

To the extent the rejection *is* intended to be based on lack of written description, Applicants respectfully traverse because the original claims recite the feature of converting the format of gray-scale image data into color image data in which each pixel is formed of a plurality of components. Since that feature is recited in the original claims, which are part of the original disclosure, Applicants submit that it is clear that Applicants considered that feature to be a part of their invention at the time of filing the application and were in possession of that feature.

On the other hand, to the extent this rejection is intended to be based on a lack of enablement, Applicants also respectfully traverse. The specification teaches, at page 10, lines 22-25:

The pseudo-color image data is color image data formed of three types of components per pixel. According to the present embodiment, the three types of components (R, G, and B) have the same values.

Thus, the specification teaches that the conversion is performed (according to this preferred embodiment) so that the converted pseudo-color data includes all three types of R, G, and B components and each component has the same value. Applicants submit that this clearly provides a written description of the claimed feature, and that this disclosure would enable one of ordinary skill in the art to make and use the claimed invention. In particular, the specification teaches one skilled in the art to convert a pixel of gray-scale data into a pixel of color data having R, G, and B components with equal values.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection under Section 112, first paragraph.

Claims 1-4, 6, 8-12, 14-24, and 26-30 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,332,030 B1 (Manjunath) in view of U.S. Patent No. 6,351,558 (Kuwata). Claim 25 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,332,030 B1 (Manjunath) in view of U.S. Patent No. 6,351,558 (Kuwata) and further in view of U.S. Patent No. 5,652,626. Claims 5, 7, and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,332,030 B1 (Manjunath) in view of U.S. Patent No. 6,351,558 (Kuwata), and further in view of U.S. Patent No. 6,125,201 (Zador). Applicants respectfully traverse these rejections for the reasons discussed below.

The present invention recited in independent Claim 1 relates to an image processing device for embedding digital watermark information in a gray-scale image or a color image. Methods are known for embedding information in a gray-scale image, and methods

are also known for embedding information in one component (e.g., the B component) of a color image. However, the present invention recited in Claim 1 is directed to a device that can embed a digital watermark in either type of image using the same method.

As recited in independent Claim 1, the present invention achieves this by including, *inter alia*, the features of judging whether inputted image data is gray-scale image data or color image data, converting the format of gray-scale image data into color image data in which each pixel is formed of a plurality of components, and embedding digital watermark information in part of the components of the color image data obtained by input means or converting means. With these features, the same embedding method is used regardless of whether the input image is color or gray-scale (i.e., a method for embedding information in a component of color image data), and the input data is converted to color if necessary so that this method can be applied.

Applicants submit that the cited art does not disclose or suggest this combination of features. As correctly noted in the Office Action, Manjunath does not disclose or suggest at least the recited features of judging means and converting means. The Office Action relies on Kuwata to remedy these deficiencies of Manjunath. However, Applicants respectfully submit that, even upon considering Kuwata, one skilled in the art would not be led to modify the device of Manjunath to obtain the claimed invention.

The Office Action asserts that Kuwata discloses the claimed judging means for judging whether inputted image data is gray-scale image data or color image data. Applicants respectfully disagree. As understood by Applicants, Kuwata does not disclose or suggest the feature of judging whether inputted image data is gray-scale data or color data and converting gray-scale data into color data. That patent discloses at least two

different types of judgments. First, it is judged whether an image is a natural image, such as a photograph, or an unnatural image, such as a drawing. That judgment is based on the number of colors used in the image. However, this is not a judgment of whether the image data is gray-scale or color data; even a drawing-type unnatural image may have color, but it will have fewer colors than a natural image. Col. 1, lines 19-22; Col. 3, lines 15-23. On the other hand, a judgment is also made as to whether an image is a binary image, such as a black-and-white image, because processing for highlighting contrast is inappropriate for that type of image and need not be done. Col. 24, lines 9-21. However, judging whether an image is a black-and-white image is not the same as judging whether it is gray-scale.

Further, Applicants submit that Kuwata does not disclose or suggest the feature of converting the format of gray-scale image data into color image data. As Applicants understand it, the color transformation disclosed in Kuwata is not a transformation from gray-scale data to color data, but instead involves transformation between different color-specification spaces, so that printing will be performed with data in a color space corresponding to the ink used by the printer. A different color transformation process is used depending on whether the image is natural or unnatural, i.e., a photograph or a drawing. Col. 4, line 66 - Col. 5, line 8; Col. 5, line 35 - Col. 6, line 8. This converting does not depend on whether the image data is gray-scale data or color data.

Moreover, Applicants submit that it would not have been obvious to combine Manjunath and Kuwata. Manjunath discloses an embedding method that can be used with either gray-scale image data or color image data. There is no reason to convert gray-scale image data to color data before using the embedding technique used by that patent. Accordingly, even if Kuwata did disclose the claimed judging and converting means, one

skilled in the art would not be motivated to alter Manjunath because it already uses a technique that can be applied to either gray-scale or color data.

In other words, the present invention can embed a digital watermark in either gray-scale image data or color image data using a single method. It does so by using a method for embedding information in color image data and converting input gray-scale image data to color image data where necessary. On the other hand, Manjunath can also embed a digital watermark in either gray-scale image data or color image data using a single method. However, it does so by using a method that can be applied to either gray-scale image data or color image data. Thus, Manjunath uses a completely different approach than the invention recited in Claim 1. However, since Manjunath is already capable of embedding information in either gray-scale image data or color image data using a single embedding method, there is no reason for one skilled in the art to alter the device of that patent to perform the claimed judging and converting.

For the foregoing reasons, Applicants submit that, even if considered in combination, the prior art does not disclose or suggest all the features recited in Claim 1.

The other independent claims recite similar features and are patentable for similar reasons. The dependent claims are believed patentable for at least the same reasons as the independent claims, as well as for the additional features they recite.

For the foregoing reasons, Applicants submit that this application is in condition for allowance. Favorable reconsideration and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'B. L. Klock', is written over a horizontal line.

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